

California WaterBlog

A biologist, economist, engineer and geologist walk onto a bar...

Modernizing California's groundwater management

Posted on [June 22, 2014](#) by [UC Davis Center for Watershed Sciences](#)



State water engineer Chris Bonds checks well flow rates at a "groundwater substitution transfer" project in 2013. Surface water becomes available for transfer to other water users by replacing that water with groundwater pumping.
Photo by John Chacon, California Department of Water Resources

“A broad consensus appears to be building among California water users and policymakers that it is high time to establish an effective, statewide framework for groundwater management.”

— Groundwater Resources Association of California, Contemporary Groundwater Issues Council

As California strains under a third year of drought, there is a strong interest in modernizing groundwater management. At the same time, a group of nearly 100 water professionals from across California can move forward with a plan. The [Groundwater Resources Association of California](#) and the [Contemporary Groundwater Issues Council](#) of California recently developed a set of recommendations. [Tim Parker](#) outlines eight principles for modernizing groundwater management into the 21st century.

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Jerry Brown and many legislators have shown that groundwater is the state's most important drought reserves. At the same time, water professionals and scholars have been exploring ways to modernize groundwater management. Organized by the [Contemporary Groundwater Issues Council](#) of California, water regulators recently developed a set of recommendations. [Vic Kretsinger](#), [Grabert](#), [Thomas Harter](#) and others are critical to moving California's groundwater management into the 21st century.

Local management

1. To further and support local groundwater management, the state should:

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- Identify local groundwater needs and problems at the basin or sub-basin level.
- Identify local and regional areas in need of more formal groundwater governance structures.
- Identify relevant local governance entities (such as water management agencies) and stakeholders, facilitate a process and timeline for developing local governance structure and identify a backstop if local management is ineffective.
- Identify and develop financing mechanisms to support local management capacity.
- Increase funding for state agencies to provide consistent technical support, quality assessment and backstop capability when local efforts are insufficient.
- Facilitate development and implementation of local groundwater management plans.

Measurable basin management objectives

2. To achieve groundwater sustainability, local basin plans' management objectives should address:

- Land subsidence
- Ecosystem health
- Surface-water flow depletions
- Water quality, including salinity and seawater intrusion
- Sustaining groundwater levels
- Economic viability of pumping costs
- Public health
- Manageability of groundwater basin as a storage reservoir

3. Water budgets should be established for each managed basin or sub-basin to define changes in storage and assess long-term drought and seasonal groundwater sustainability.

4. Local and state agencies should ensure successful water budget development and document adverse impacts through comprehensive basin data collection, including:

- Aquifer depth-specific groundwater levels
- Aquifer depth-specific water quality measurements
- Aquifer characterization
- Consumptive use, including crop evapotranspiration
- Metering of large pumpers and estimates of pumping by small pumpers
- Precipitation
- Stream gauging
- Land subsidence

5. To manage local groundwater sustainably, local or regional entities should:

- Measure, assess and report on aquifer conditions
- Review and recommend specific policy and management actions to meet basin management objectives
- Develop mutually compatible objectives for sub-basins connected to neighboring sub-basins, with state water authorities acting as a backstop

Data management and information sharing

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6. State and local agencies should make data more accessible.

- Data on pumping, well-drillers' reports and other groundwater information can better inform analyses and computer models, which provide insights into better groundwater management
- State constraints on data access are outdated and complicate data compilation

7. Make groundwater data more transferrable.



U.S. Geological Survey scientists say cracks and buckles along the Delta-Mendota Canal are likely caused by subsidence from groundwater overdraft. Photo by Amy Quinton, Capital Public Radio, November, 2013

- Coordinate access to data archives
- Consolidate databases as appropriate
- Develop easily accessible data houses [2] or web portals [3] linking multiple databases [such as the [California Statewide Groundwater Elevation Monitoring](#) (CASGEM) and [Advisory Committee on Water Information](#)] to build local capacity, maintain local control and link to other data
- Front-end search engines can facilitate data searches
- Databases should be available to local groundwater managers

8. Develop minimum monitoring standards for groundwater levels, groundwater quality, water budgets, subsidence and reporting.

Groundwater resources in many areas of California are depleted to levels never before experienced in state history. At the same time, a broad consensus appears to be building among California water users and policymakers that it is high time to establish an effective, statewide framework for groundwater management.

Such a framework is needed to define and protect private groundwater-use rights and public interests in groundwater sustainability. Implementation of this framework will require strong local and regional leadership, clear mandates from the Legislature and secure funding.

Vicki Kretsinger Grabert is president of Luhdorff & Scalmanini, consulting engineers in Woodland. Thomas Harter is a groundwater specialist with the Cooperative Extension and the Center for Watershed Sciences at UC Davis. Tim Parker is president of Parker Groundwater, a groundwater consulting firm in Sacramento. The three are on the Groundwater Resources Association of California board of directors.

[1] The Groundwater Resources Association of California and the UC Davis Robert M. Hagan Endowed Chair hosted the meeting on May 13, following the release of recommendations on groundwater reform by the [Association of California Water Agencies](#). The [Center for Collaborative Policy](#) at California State University, Sacramento, facilitated the discussion, which focused in three areas: (1) success stories and impediments for local groundwater management, (2) effective metrics for meeting basin management objectives at the local or state level and (3) data management and information sharing.

[2] Large databases include the [USGS National Water Information System](#) and those provided by the [Consortium of Universities for the Advancement of Hydrologic Science](#).

[3] Web portals include the [National Groundwater Monitoring Network](#), which links many states' groundwater-

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monitoring databases.

Further reading

[California Assembly Bill 1739](#) (Dickinson, 2014)

[California Senate Bill 1168](#) (Pavley, 2014)

Lund, J.R. and Harter, T. (2013), [California's groundwater problems and prospects](#), CaliforniaWaterBlog.com, Jan. 30, 2013

Nelson, Rebecca (2011), [Uncommon Innovation: Developments in Groundwater Management Planning in California](#), Water in the West Working Paper 1, Water in the West Program, Stanford University, California, 43 pp., March 2011

[Recommendations for Achieving Groundwater Sustainability](#), Association of California Water Agencies, April 2014

[Recommendations for Sustainable Groundwater Management: Developed through a Stakeholder Dialogue](#), California Water Foundation, May 2014

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9 Responses to *Modernizing California's groundwater management*



[Douglas Deitch](#) says:

June 23, 2014 at 8:25 am

Unlike virtually all the rest of "Ag California", there is not even one square inch of reduced production in the entire Monterey Bay Region in response to either this multi year historic drought or already massive multi decades long chronic Big Ag

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ground water overdraft, mining, over production, and ground water expropriation through massive produce export and sale. The also already permanent and, again, massive salt water intrusion losses and nitrate contamination principally caused by the 85% over user of this entirely local ground water resource and Big Ag's political stranglehold and control of the the too numerous and now counterproductive heritage political and private entities which rule our Monterey Bay ground water commons make the Monterey Bay "Ground Zero" and first in line for the new "Local Management" measures proposed under the "Groundwater Resources Association of California, Contemporary Groundwater Issues Council"

... and you better get busy fast, before there's just nothing left (as the late Mr. Joe Scalmanini advised us here in 1995:

<http://www.dougdeitch.com> , <http://www.ourinconvenienttruth.net> ((Joe's quote here)),
<http://www.begentlewiththeearth.com> , <http://www.begentlewiththeearth.org> , <http://www.begentlewiththeearth.net> ,
<http://www.ourinconvenienttruth.org> , <http://www.douglasdeitch.com> , <http://www.thinklocalactlocal.com> ,
<http://www.thebestthatmoneycantbuy.net> , etc...)

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Douglas Deitch says:

June 23, 2014 at 3:08 pm

... how we rate, our "priority", here in the Monterey Bay?

No problema, mis amigos y mis vecinos ... http://www.water.ca.gov/groundwater/casgem/basin_prioritization.cfm

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David E. McCabe says:

July 2, 2014 at 1:31 pm

Let me just say; as a former GM of Pajaro Valley Water Management Agency, one of the few such agencies dedicated wholly to the management and conservation of groundwater in California, I am heartened by the drought induced interest in finally regulating groundwater. But, hold it right there for a moment! LOCAL CONTROL does not work!! Objective control can only be attained by a State Agency. Local control is the equivalent of letting "The Fox guard the chicken-coop".

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